

ABSTRACT OF THE DISCLOSURE

Methods of fabricating a semiconductor device having a MOS transistor with a strained channel are provided. The method includes forming a MOS transistor at a portion of a semiconductor substrate. The MOS transistor is formed to have source/drain regions spaced apart from each other and a gate electrode located over a channel region between the source/drain regions. A stress layer is formed on the semiconductor substrate having the MOS transistor. The stress layer is then annealed to convert a physical stress of the stress layer into a tensile stress or increase a tensile stress of the stress layer.

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